

Abstract

Optical instruments having, inter alia, optics to process wavelengths of electromagnetic radiation to produce an interferogram. The instruments include at least one optical path and optical elements positioned along this path for splitting and

5 recombining the wavelengths which interfere with each other to produce a plurality of different fringes of different wavelengths. In one group, the optics include matched gratings which are positioned along the optical path outside of the interferometer optics to produce first and second sets of spectrally dispersed beams. The interferometer optics also includes a beam splitter and first and second mirrors. The gratings may be

10 positioned in a variety of locations along the optical path. In another group, the optics include a beam splitter having a plurality of surfaces, wherein each of the surfaces is either 100% reflective, 100% transmissive or 50% reflective and 50% transmissive. In a third group, the optics includes the beam splitter having a plurality of reflective and transmissive surfaces and matched gratings. The instruments can all include a detector

15 for detecting the interferogram and means for processing the detected interferogram to produce spectral information.